

**Embryology of the Rosaceae.**—A literary study of the embryology of the Rosaceae brings JACOBSSON-STIASNY<sup>19</sup> to some conclusions in regard to the interrelationships of the subdivisions of this large family. The characters which were traced through the various forms are number and character of integuments, number of archesporial cells and megaspores, number of tapetal cells, presence or absence of an obturator, character of young and mature endosperm, fate of the nucellus, character of the suspensor, orientation of the ovule, and form of the embryo. After tabulating and comparing all these features, the author concludes that the Rosaceae do not represent a single developmental line, but that the Spiroideae are the primitive stock which has produced two principal lines, one consisting of the Pomoideae and Prunoideae, and the other of the Rosoideae.

While everyone recognizes that in an investigation of such scope it would be impossible to make a laboratory study of all the forms, still those who are familiar with such investigations realize that descriptions are not always reliable, and that observations upon embryology, made before technique had reached its present efficiency, may be quite misleading. However, such an assembling of the literature and the graphic presentation of the results will be useful to workers in various fields.—CHARLES J. CHAMBERLAIN.

**Growth forms.**—On the basis of RAUNKIAER's classification of growth forms, TAYLOR<sup>20</sup> has made an interesting analysis of his own *Flora of the vicinity of New York*, both as a whole and as to certain of its constituent elements. He notes the high percentage of water plants and of perennials possessing rootstocks and bulbs; and calls attention to the much greater abundance of woody forms among the southern types in the flora than among the northern ones. The "biological spectrum" of growth forms in the region covered is compared with spectra of several other areas, arctic, temperate, and tropical, and certain conclusions as to climate are suggested. Such a method of studying climate as this of RAUNKIAER's, by rigid comparative analyses of the floras of widely separated regions, seems to be open to the general objection that it underestimates the importance of the historical factor. Temperate areas of the Northern Hemisphere, for example, contain a much higher proportion of herbaceous species than do regions with a corresponding climate south of the equator, presumably owing to the fact that the herbaceous type has originated for the most part in the north temperate zone. Such careful analyses of growth habit as the present one, however, are of much value for drawing critical comparisons between floras, and for other purposes. It is to be hoped that their number will continue to increase.—E. W. SINNOTT.

<sup>19</sup> JACOBSSON-STIASNY, EMMA, Versuch einer embryologisch-phylogenetischen Bearbeitung der Rosaceae. Sitzungsber. Kaiserl. Akad. Wiss. Wien 123:1-38. 1914.

<sup>20</sup> TAYLOR, N., The growth forms of the flora of New York and vicinity. Amer. Jour. Bot. 2:23-31. 1915.